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Rod L. Penfield
Site Vice President

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December 30, 2019
L-19-292

10 CFR 50.73

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT:
Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
LER 2019-002-00

Enclosed is Licensee Event Report (LER) 2019-002-00, "Manual Reactor Trip at 15% Power Due to Lifting of the 1A Main Steam Safety Valve." This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A).

There are no regulatory commitments contained in this submittal. Any actions discussed in this document that represent intended or planned actions are described for the NRC's information, and are not regulatory commitments.

If there are any questions or if additional information is required, please contact Mr. Steve Sawtschenko, Manager, Regulatory Compliance and Emergency Response, at 724-682-4284.

Sincerely,

Rod L. Penfield
Site Vice President

Enclosure – Beaver Valley Power Station, Unit 1 LER 2019-002-00

cc: Mr. D. C. Lew, NRC Region I Administrator
Mr. J. A. Krafty, NRC Senior Resident Inspector
Ms. J. C. Tobin, NRC Project Manager
INPO Records Center (via INPO Industry Reporting and Information System)
Mr. L. Winker (BRP/DEP)

IE22
NRR

Enclosure
L-19-292

Beaver Valley Power Station, Unit 1 LER 2019-002-00

NRC FORM 366 (04-2018)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2020

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. Facility Name	2. Docket Number	3. Page
Beaver Valley Power Station Unit 1	05000 334	1 OF 3

4. Title

Manual Reactor Trip at 15% Power Due to Lifting of the 1A Main Steam Safety Valve

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Rev No.	Month	Day	Year	Facility Name	Docket Number
									N/A	05000
11	04	2019	2019	002	00	12	30	2019	Facility Name N/A	Docket Number 05000

9. Operating Mode	11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: *(Check all that apply)*			
1	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☑ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. Power Level	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
15	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(i)
	☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
		☐ 50.73(a)(2)(i)(C)	☐ Other (Specify in Abstract below or in NRC Form 366A)	

12. Licensee Contact for this LER

Licensee Contact	Telephone Number (Include Area Code)
Steven Sawtschenko, Manager, Regulatory Compliance and Emergency Response	724-682-4284

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to ICES	Cause	System	Component	Manufacturer	Reportable to ICES

14. Supplemental Report Expected	15. Expected Submission Date	Month	Day	Year
☐ Yes (if yes, complete 15. Expected Submission Date) ☑ No				

Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On November 4, 2019, at 0535 Eastern Standard Time, the Beaver Valley Power Station Unit 1 reactor was manually tripped at approximately 15% reactor power due to secondary system perturbations that caused the 1A Main Steam Safety Valve (MSSV) to lift. The 1A MSSV opened, instead of the expected opening of the 1A Atmospheric Dump Valve (ADV), as the tolerance range for ADV pressure switch overlapped the tolerance range for 1A MSSV. The 1A MSSV closed just prior to the trip.

The Reactor Trip was without complications. All control rods fully inserted into the core. The plant was stabilized in Mode 3 with normal Main Feedwater System in service.

The reason for the MSSV opening prior to the 1A ADV opening was due to the as-left setpoint of the 1A ADV pressure switch during its calibration in the prior refueling outage. The setpoint drifted high and was found to be above the opening setpoint of the MSSV.

The pressure switch input to the 1A ADV was adjusted to within the tolerance band prior to reactor startup. An Engineering Evaluation established new setpoint and reset values for the three ADVs.

This event was reported per Event Notification 54369 as an actuation of the Reactor Protection System per 10 CFR 50.72(b)(2)(iv)(B).

This event is being reported pursuant to 10 CFR 50.73(a)(2)(iv)(A) as a condition that resulted in the manual actuation of the Reactor Protection System.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Beaver Valley Power Station Unit 1	05000- 334	2019	- 002	- 00

NARRATIVE

NARRATIVE
Energy Industry Identification System (EIIS) Codes identified in the text as [XX].

CONDITIONS PRIOR TO OCCURRENCE:

Beaver Valley Power Station Unit 1 (BV-1) was in Mode 1 at approximately 15% reactor power, starting up from a refueling outage.

There were no Structures, Systems, or Components that were inoperable at the start of the event that contributed to the event.

DESCRIPTION OF EVENT:

On November 4, 2019, at 0535 Eastern Standard Time, BV-1 reactor was manually tripped at approximately 15% reactor power due to secondary system perturbations that caused the 1A Main Steam Safety Valve (MSSV) [SB] to lift.

The unit was starting up from a refueling outage and shortly after reaching the point of adding heat at 0403 hours, the three Main Feedwater Regulation Valve Bypass Valves (MFRV Bypass Valves) [SJ] were noted to have oscillations. Upon stabilizing the unit at 15% power, oscillations were noted on the secondary side of the plant (Steam Generator levels [JB], steam flows [SB], MFRV Bypass Valve control station demand signal and Condenser Steam Dump Valve (CSDV) [JI] control station demand signal). At 0510 hours, the secondary perturbations degraded with oscillations in Steam Generator levels noted to be fluctuating approximately 2-3%. Field operators reported that all three MFRV Bypass Valves were cycling excessively and controlling over the entire valve stroke range (full closed/full open).

A Reactor Operator (RO), the Reactivity Senior Reactor Operator, and the Unit Supervisor discussed and agreed to place the CSDV Auto/Manual station to Manual in accordance with the short term configuration control process in an attempt to settle out the MFRV Bypass Valve oscillations.

The CSDV controller demand was increased to reduce Reactor Coolant System (RCS) [AB] average temperature. Pressurizer pressure decreased as a result and went below the limit required by Technical Specification 3.4.1, Reactor Coolant System Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits. The CSDV controller demand was then reduced to maintain RCS average temperature within the control band. At 0516 hours, operators observed that the 1B and 1C Steam Generator Atmospheric Dump Valves (ADV) [SB] had both opened due to high steam generator pressures. The 1A ADV was not opened, and reports were received that the 1A MSSV was open. The 1A MSSV remained open below the expected blowdown pressure referenced in operating manual procedures.

The RO reported that reactor power was continuing to rise (increase of approximately 0.5% power) due to the increasing steam flow. Due to the 1A MSSV remaining open and the 1st bank of CSDVs open (with steam generator pressures dropping) and reactor power increasing, the control room staff made a conservative decision to manually trip the reactor at 0535 hours.

The 1A MSSV reseated around the time of the reactor trip, and the control room staff stabilized the plant in accordance with post-trip procedures. The trip response was not complex as all systems responded normally post trip. All control rods [AA] fully inserted to shutdown the reactor, and the plant was stabilized in Mode 3 with normal Main Feedwater System [SJ] in service.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Beaver Valley Power Station Unit 1	05000- 334	2019	- 002	- 00

NARRATIVE

CAUSE OF EVENT

The reason for the MSSV opening prior to the 1A ADV opening was due to the as-left setpoint of the 1A ADV pressure switch during its calibration in the Spring 2018 refueling outage.

The 1A ADV has a trip open feature that is expected to occur at 1060 psig. This feature is activated by a pressure switch which is calibrated to a tolerance of +/- 10 psig. During the previous refueling outage, the pressure switch as-left setting was 1068 psig, near the setpoint upper tolerance range of 1050 to 1070 psig. Additionally, following the reactor trip, the as-found trip setpoint of this pressure switch was found at 1074 psig, resulting from a drift that was high out of tolerance and above 1A MSSV lift setpoint of 1068 psig.

Prior to the trip, steamline pressure reached 1068.3 psig and satisfied the lift setpoint of 1075 psig (1085.75 psig-1042.75 psig) for the MSSV. The MSSV reseated when pressure was reduced.

ANALYSIS OF EVENT

The plant risk associated with the unexpected opening of 1A MSSV and manual reactor trip that occurred on November 04, 2019 is considered to be very low. This is based on the conditional core damage probability and conditional large early release probability for this event.

This event was reported per Event Notification 54369 as an actuation of the Reactor Protection System per 10 CFR 50.72(b)(2)(iv)(B). This written report is submitted pursuant to 10 CFR 50.73(a)(2)(iv)(A) as a condition that resulted in the manual actuation of the Reactor Protection System.

CORRECTIVE ACTIONS

1. The pressure switch input to the 1A ADV was adjusted to within the tolerance band. (Completed on November 05, 2019).
2. An Engineering Evaluation established new setpoint and reset values for the three ADV pressure switches. Work orders are scheduled per the Work Management Process.

Completion of item 2 listed above is being tracked in the Corrective Action Program.

PREVIOUS SIMILAR EVENTS

Condition Report 2009-59531 documents that on May 21, 2009, the MFRV Bypass Valves began to cycle 25-40% while in automatic control at approximately 15% power. An operator took manual control of the CSDV controller in an attempt to stabilize Steam Generator pressure. As this evolution was in progress, the 1A MSSV lifted. Corrective Actions concluded there was no design issue with the safety code lifting, and the MSSV setpoint and accumulation can overlap with the ADV range.

Condition Report 2019-09324